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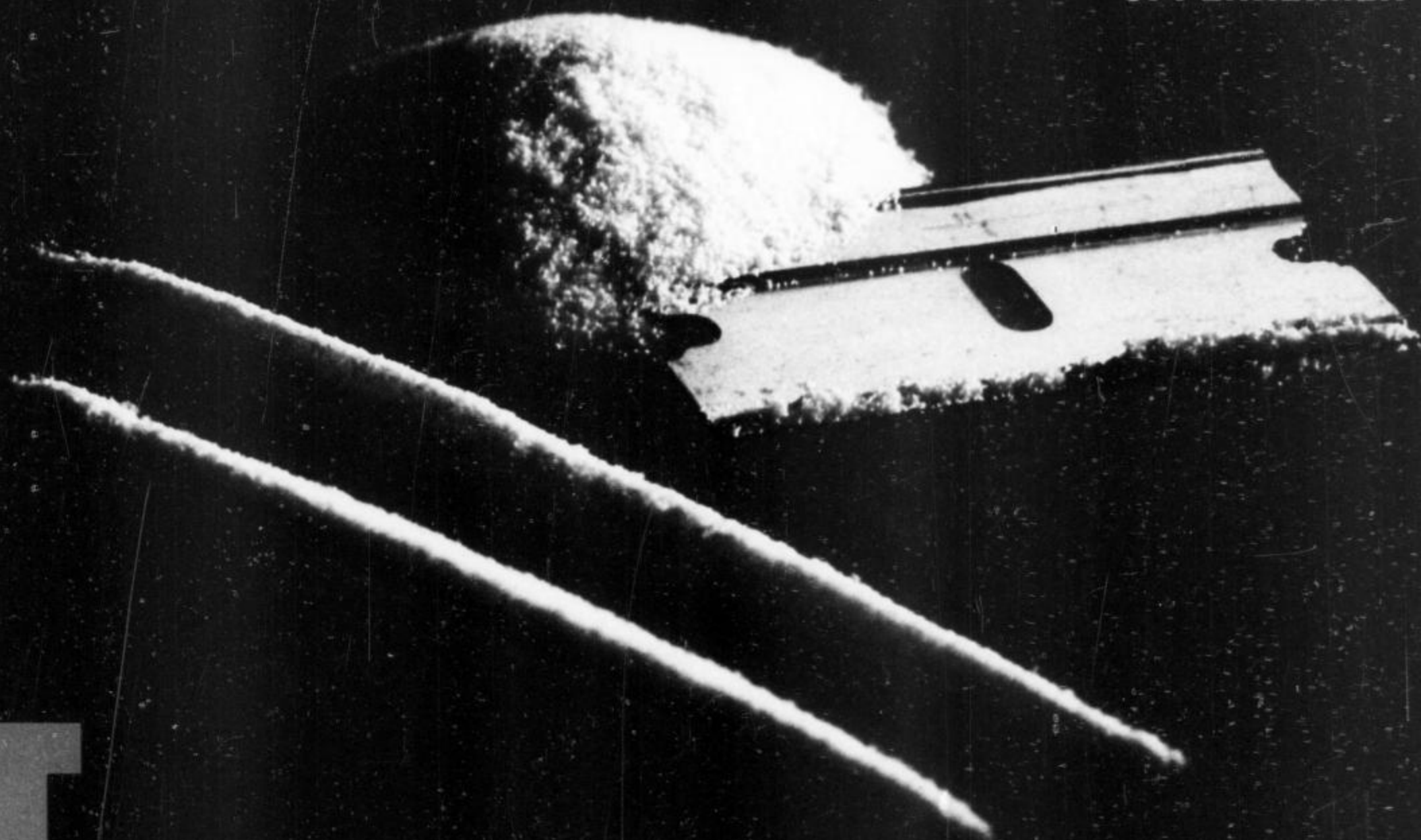
# DISCOVER

THE NEWSMAGAZINE OF SCIENCE

MARCH 1985



**NEW DISCLOSURES  
ABOUT THE  
PLOT TO GET  
OPPENHEIMER**



**T**his amount of cocaine can make you feel that you're brilliant, tireless, masterful, invulnerable, and that you're going to live forever.

**It can also kill you.**

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#### **A VERITABLE JAWS**

Hooked off Hawaii when it swallowed an anchor, this hitherto unknown plankton-feeding shark was aptly nicknamed Megamouth.



*Diehards search for dinosaurs, snowmen, and other abominable beasts, but fellow scientists give them little chance of success*

# IN QUEST OF THE WILD AND WEIRD

## THE BIG FOUR

BY JARED DIAMOND

*"It is dawn in a small village on the coast of Tanganyika. Suddenly the silence is broken by a woman's shrill scream. On the still-fresh sand in the market-place lies a shapeless heap of flesh, the unrecognizable body of a man, ripped and pounded to mincemeat by some incredible killing-machine. The scavenging birds fly off their carrion, and one by one the villagers gather round in a circle, silent until one of them notices a few greyish hairs among the drying blood and exclaims: 'Mngwa.'*

*The mngwa is the most feared of all Africa's mysterious beasts, although the whites do not know it at all, and even to the blacks it is largely a mystery; for its name comes from the Kiswahili mu-ngwa, which means 'strange one.'*"

*On the Track of Unknown Animals*  
Bernard Heuvelmans, President  
International Society of Cryptozoology

**C**rypto what? Good question. Everyone knows zoology is the branch of biology that studies animals (as opposed to plants). Cryptozoology, however, is a new coinage, devised from the Greek *kryptos*, meaning hidden or secret, as in crypt. But there's nothing very cryptic about cryptozoology or its practitioners, cryptozoologists. They're seeking to discover previously unknown species of animals, or to rediscover species thought to be extinct.

*Jared Diamond, a physiologist at UCLA Medical School, is an avid bird watcher.*



**SASQUATCH**  
A hairy man-like creature identified (by some) from huge footprints



**SNOWMAN**  
Hardly abominable in this drawing, based on a Soviet "sighting"



**DINOSAUR**  
From Disney's *Baby*, about a quest for a living brontosaurus in Africa



**NESSIE**  
The most famous "inhabitant" of Scotland's Loch Ness

So what's wrong with that? Nothing really—if cryptozoologists were only after hitherto unclassified species of mice or dickybirds (which in fact continue to show up as scientists explore rain forests and other scientifically neglected regions). But cryptozoologists are after bigger game—ferocious and toothy carnivores, like the saber-toothed tiger; humanlike primates, perhaps even a surviving Neanderthal; and, though almost every reputable scientist is sure they vanished from the face of the earth 65 million years ago, a leftover dinosaur or two. Cryptozoology's Big Four are:

- Nessie, the much investigated "monster" alleged to dwell in the chilly waters of Scotland's Loch Ness.
- Yeti (Tibetan for all-devouring demon), or Abominable Snowman, a humanlike creature said to inhabit the Himalayas.
- Sasquatch, a.k.a. Bigfoot, a large, hairy biped known from its outsized footprints in British Columbia and the Pacific Northwest. (Canadian writer J.W. Burns coined the name in the 1930s for a fictional character, a giant, long-haired Indian.)
- Mokéle-Mbémbe, a mock-African name first used by a turn-of-the-century German officer, Freiherr von Stein zu Lausnitz, for an elephant-sized beast he had heard about in the Cameroons. Now M-M has become an amphibious dinosaur still believed to be lurking in the Central African forests by cryptozoologists, notably Roy Mackal, a University of Chicago biologist, who has led an expedition (unsuccessful) to look for it.

Lest anyone question their legitimacy, in 1982 cryptozoologists took on institutional trappings. They organized the In-



ternational Society of Cryptozoology and launched an annual journal. Still, despite extensive searches into the globe's biological nooks and crannies, the beasts continue to elude cryptozoologists.

Yet their optimism seems inexhaustible. Each new year brings fresh clues and tantalizing reports: a grotesquely large footprint discovered in the north country, a fleeting glimpse of some mysterious creature in the mountains or jungle. Some of the accounts come from people in remote villages who speak convincingly of strange and wondrous beasts, like Heuvelmans's mngwa. On occasion the reports are more substantive. In such areas as the Peruvian Amazon, much of which is still virgin territory to science, biologists are finding species that are indisputably new to them, though usually nothing more exciting than mice and hummingbirds.

If such inconsequential creatures have escaped notice until now, isn't it possible that new large species are skulking in these obscure places as well? As it happens, skeptics have been astonished by the discovery of several big animals in this century. For instance, the world's largest lizard, the ten-foot-long Komodo dragon, was unheard of by biologists before 1912, when it was found on the island of Komodo, now part of Indonesia. Similarly, until a live specimen was accidentally discovered in 1938, the five-foot coelacanth was known only from the fossil record as a fish that had died out 65 million years ago. An even more spectacular fish was hauled out of the Pacific off Hawaii in 1976 when it swallowed the sea anchor of a U.S. naval vessel: a plankton-feeding shark 14 3/4 feet long, the "first" member of an entirely

## *Despite extensive searches into the globe's biological nooks and crannies, the sought-after beasts continue to elude them*

new family of sharks. Its huge jaws quickly earned it the nickname Megamouth (it has since been christened *Megachasma pelagios*).

So it's no wonder cryptozoologists fan out each year to photograph the African dinosaur, or to track the Loch Ness monster with echo-sounding equipment. Inevitably they return with more provocative reports from natives, underexposed photographs of suggestive shapes, and tragicomic accounts of amazing beasts whose carcasses rotted away in the hot tropical sun before they could be preserved. With everything, that is, except proof.

It's easy to ridicule the cryptozoologists. Their literature is filled with implausible claims (mammoths seen alive in Siberia), gullibly accepted second-hand accounts (mermaids reported by natives to have been swimming off New Guinea), and possible fraud (a photograph of a spider monkey with its tail concealed, suggesting a new species of ape). Not only do cryptozoologists fail at their goals, but their goals are also badly out of scientific fashion. In the nineteenth century,

when much of the world was still terra incognita to science, the discovery of new species, such as those identified by the young Charles Darwin during his cruise aboard the *Beagle*, was the most exciting and productive area of biology. Today, as biology concentrates on the study of DNA, any scientists so naïve as to seek big new species are viewed professionally as embarrassing anachronisms, believers in dragons and unicorns.

No one doubts that thousands of species of insects, worms, and deep-water animals await cataloguing and description. In fact, new birds and mammals turn up every year, and occasionally even a species thought extinct is rediscovered. While these finds rarely make the front page, they expand our appreciation of what evolution can produce. They also give us some hint of whether the cryptozoologists' dream animals are likely to materialize.

Consider the rediscovery of supposedly extinct birds. Among the most peculiar parrots is New Zealand's kakapo, which holds the triple distinction of being one of the few known nocturnal parrots, the world's heaviest parrot (five pounds), and the only flightless one. Following its rediscovery in 1958—more than 30 years after its last sighting—biologists found that the kakapo also has some unusual mating habits. During the breeding season males gather at traditional areas to be scrutinized by females and picked as mates. But the chosen males are fickle: unlike many birds, they provide no help in nest-building or rearing of the young.

Another long-lost mystery bird was the yellow-fronted bowerbird, which scientists were aware of only from a few stuffed specimens of unknown origin, sold to Lord Rothschild in 1895 by a feather merchant. In 1981, I found its home grounds in

### GIANT FOREST HOG



Not since this beast's discovery, in Kenya in 1904, has a new genus of such large terrestrial animals been found.

### ALLEN'S MONKEY



Only 18 inches high, this friendly fellow from the Congo got into the literature in 1907.

### KOMODO DRAGON



The world's largest lizard (up to 300 pounds) was discovered in 1912 on the Dutch East Indian island whose name it bears.



New Guinea's remote Foja Mountains (DISCOVER, January 1982). Its mating practices are even more peculiar than the kakapo's: the males erect towers of sticks, collect fruits of three colors, and woo the females by holding a blue fruit in their beaks and pointing it at the prospective mate. Males of most animal species use their bodies, voices, or scents to attract females, but bowerbirds rely on colored objects instead. Humans carry this development to an extreme with their flaunting of, for example, jewelry and sports cars.

Several mammals have been rediscovered after much longer periods of "extinction." Australia's mountain pygmy possum was known only from fossils about 20,000 years old. Then, in 1966, one was caught alive behind the garbage pail in the kitchen of the Melbourne University ski lodge. In 1972 an "extinct ice-age peccary" was found running in herds through the thornlands of western Paraguay. Both the possum and the peccary survived their rediscovery, but Bulmer's fruit bat apparently didn't, and thereby hangs a sad tale.

In 1977 the vertebrate zoologist J.I. Menzies described this bat, which lacks front teeth (incisors) in its lower jaw, from 10,000-year-old fossils collected in a New Guinea cave. Shortly thereafter, to his astonishment, Menzies received a specimen of his "extinct" bat that had been collected alive from a large roost in another New Guinea cave. Unfortunately, when the collector returned to the cave later that year, he found that a hunter had killed or driven away the colony. To Bulmer's fruit bat may thus fall the dubious distinction of having been rediscovered

## *In light of these discoveries, how bullish should we be about the cryptozoologists' chances of success?*

and re-exterminated in the same year.

The rate of discovery of unknown bird and mammal species peaked in the nineteenth and early twentieth centuries and declined steeply thereafter, as biological expeditions filled in one blank on the map after another. Surprisingly, the rate has held steady since 1940, at about three new species of birds and even more species of mammals per year.

**T**he richest recent sources of new species have been the jungles of South America, Africa, and New Guinea. Europe and the U.S., on the other hand, are so well explored that they have yielded no significant novelties for a long time. However, one doesn't have to go far from the continental U.S. for major discoveries—the banana bat of Mexico wasn't described until 1960, and a striking new honey-creeper was spotted on the rim of Hawaii's Haleakala crater in 1973.

Most of the new species are small and fairly similar to known species. Eighty-one per cent of the new mammals are bats, rats, or shrews, and 75 per cent of the new

birds are small songbirds. Some recent finds, however, are more spectacular. Peacocks were known only from Southeast Asian varieties until an ornithologist, tipped off by some mysterious feathers from the Belgian Congo, located the African peacock in 1936. Also in the 1930s, rumors of an unknown forest ox in Cambodia led to the discovery of the kouprey, the most primitive of living wild cattle, weighing up to a ton on the hoof, about as much as a Holstein. Even four new genera of whales have been found in this century, one of them being the Chinese river dolphin, a freshwater creature inhabiting the Yangtze River. Still more surprising was a discovery in 1973 at the opposite extreme: a tiny tailless bat in a Thai cave, barely the size of a large bumblebee, weighing one fourteenth of an ounce and with a head and body about one and a quarter inches long. Called Kitt's hog-nosed bat, it may be the world's smallest warm-blooded animal.

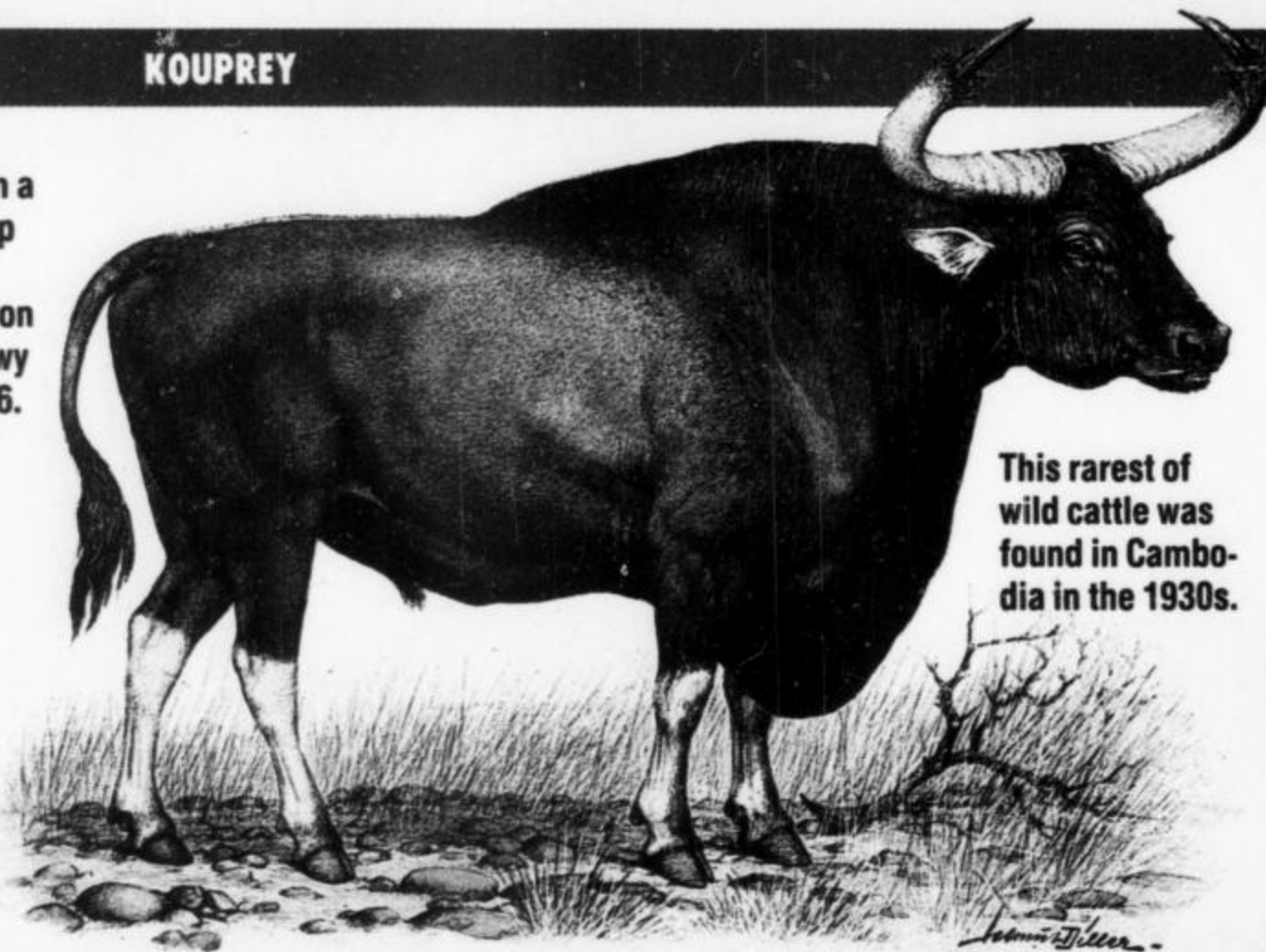
In light of these discoveries and rediscoveries, how bullish should we be about the cryptozoologists' chances of success? One of their hopes is that the missing monsters may be hiding in remote unexplored regions. My experiences in the Foja Mountains, in Indonesian New Guinea, leave me bearish. Steep, jungle-covered, and completely devoid of any human population, these mountains are one of the most inaccessible areas in the Old World tropics. No biologist had visited them before the first time I was dropped off there by helicopter in 1979. The animals were thoroughly tame from lack of human contact. Male bowerbirds courted females while I stood in full view at the bower. Wallabies and kangaroos let me approach within a few yards. Here, if anywhere in the world,

### CONGO PEACOCK



A feather in a native's cap led to the identification of this showy bird in 1936.

### KOUPREY



This rarest of wild cattle was found in Cambodia in the 1930s.

MCHUGH—PHOTO RESEARCHERS

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## COELACANTH



The Comoro Islander's prize catch belongs to a group of fish thought, until 1938, to have died out with the dinosaurs.

UNPHOTO PRESS



## NO STINKING FISH IN MY TAXI!

Cryptozoology's greatest triumph is the coelacanth (pronounced SEAL-uh-canth). Until a live specimen was trawled off South Africa in 1938—"No stinking fish in my taxi!" snapped a cabbie at dockside when asked to convey it to the local museum—it was known only from the fossil record as belonging to a group of primitive fish that had apparently expired with the dinosaurs 65 million years ago. Since then, more than 80 of these toothy, lobe-finned living fossils have been caught, all by native fishermen off the Comoro Islands near Madagascar.

While no coelacanths have survived more than a day in captivity—they are adapted to cold, unlighted ocean depths—pickled or frozen specimens have yielded remarkable findings about a fish whose ancient kin may be close to the ancestors of all land vertebrates. Unlike most fish, coelacanths are ovoviviparous: the mother gives birth to live young after about a year's gestation. The male, like male mammals, must somehow fertilize the female internally: quite a feat for an animal without a penis—only some erectile protuberances on its belly.

### OPEN-AND-SHUT CASE

A hinge runs across the cranium, letting the fish open its jaws and apply a powerful bite to the small, bottom-dwelling fish it preys upon.

### NOT MUCH BRAIN

For its size, the coelacanth has a small brain, weighing only a few grams. At far left, a CT scan shows the skull in cross section.

### HUNTING IN THE DEEP

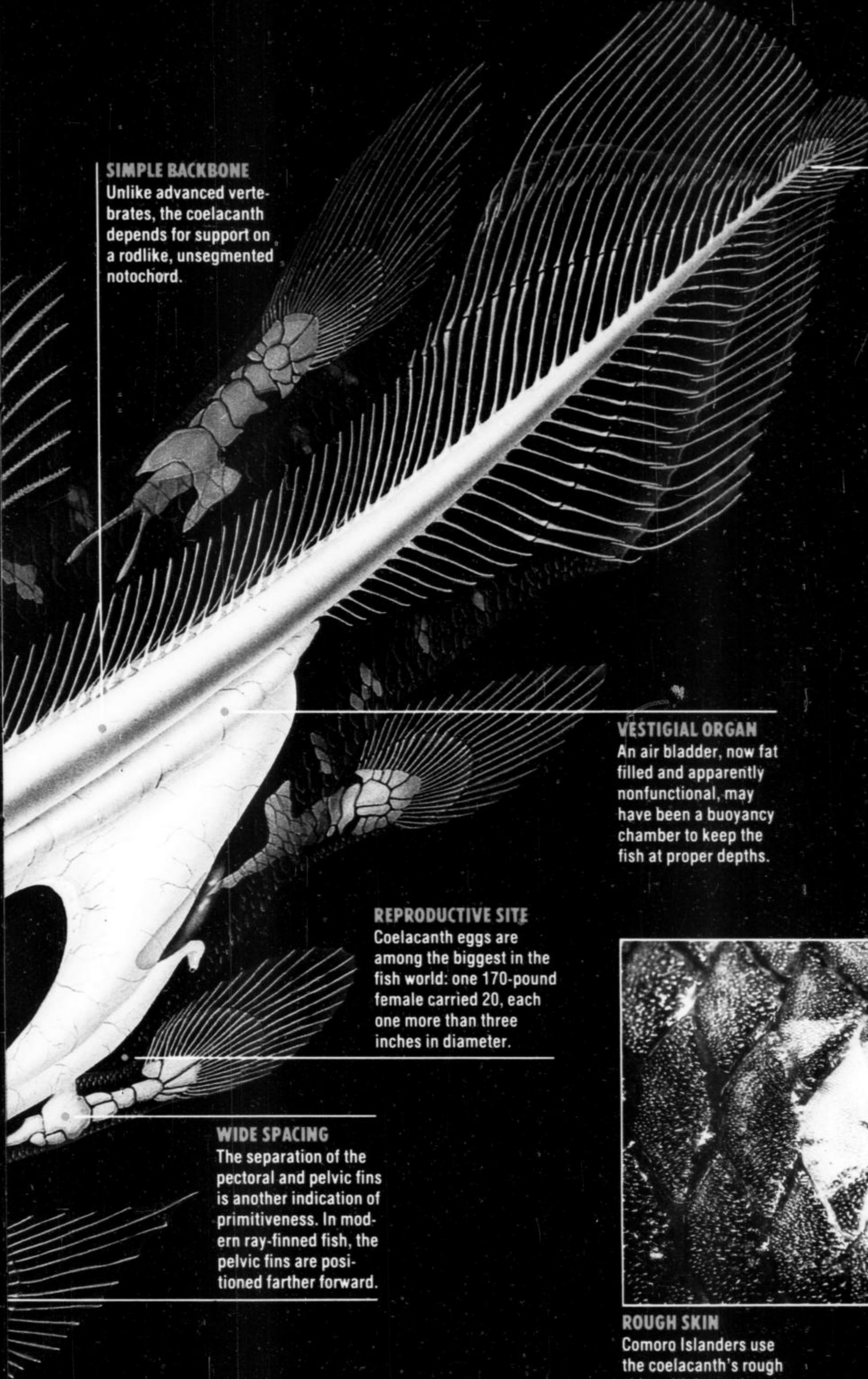
A jelly-filled gland, under the nose cartilage, perhaps sensitive to electrical fields, may help fish detect prey.

### PRIMITIVE PUMP

The tiny heart shows more clearly than in any other vertebrate that this organ was once only a pulsing tube.

ILLUSTRATION BY K. YUYA, NEWTON MAGAZINE—UNIPHOTO PRESS





#### SIMPLE BACKBONE

Unlike advanced vertebrates, the coelacanth depends for support on a rodlike, unsegmented notochord.

#### GETTING SOME ADDED KICK

All coelacanths, both fossil and living, have a small second tail that seems to help them swim better.

#### VESTIGIAL ORGAN

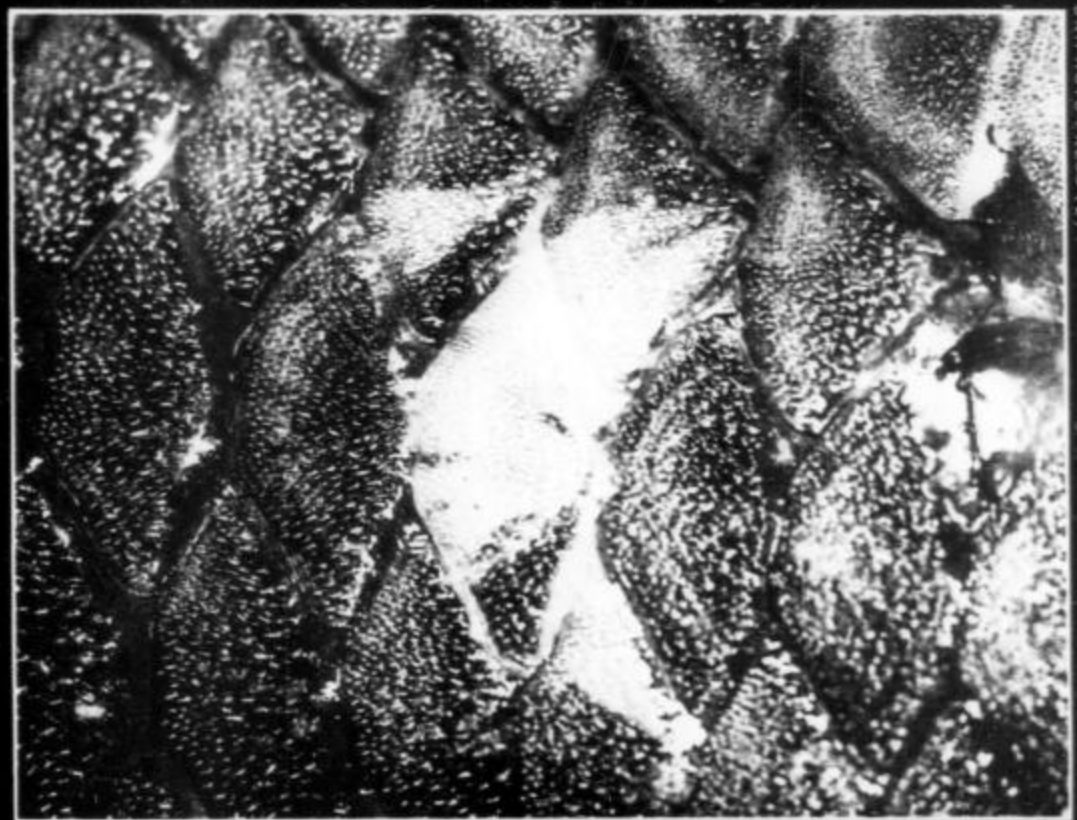
An air bladder, now fat filled and apparently nonfunctional, may have been a buoyancy chamber to keep the fish at proper depths.

#### REPRODUCTIVE SITE

Coelacanth eggs are among the biggest in the fish world: one 170-pound female carried 20, each one more than three inches in diameter.

#### WIDE SPACING

The separation of the pectoral and pelvic fins is another indication of primitiveness. In modern ray-finned fish, the pelvic fins are positioned farther forward.



#### ROUGH SKIN

Comoro Islanders use the coelacanth's rough skin, with its oval scales and sharp barbs, in place of sandpaper.



creatures exterminated by hunters elsewhere might have survived. Indeed, briefly I thought I had achieved cryptozoological nirvana when I espied, climbing in the trees, some large spotted and striped red, yellow, and pink kangaroos. Later I learned that they were already known to science, if not to this scientist, as Goodfellow's or Matschie's tree kangaroo.

The other hope of cryptozoologists is that discoveries of strange beasts may come from the testimony of native peoples in remote areas. After all, believers in the Big Four argue, this is how the kouprey and Komodo dragon were discovered. Mightn't the reports of mermaids and dinosaurs also prove to be true?

Again, my experiences in New Guinea may be instructive. At every village I routinely asked hunters to describe all the animals they knew. Along New Guinea's Fly River, they ticked off birds with such colorful-sounding names as the *i, wo, screw, screw-screw, du-du, pis-pis, yor-bitchul-bitchul*, *wai-squirty-squirty*, and *dinigahawasogeri*. As I walked the jungle with them, I gradually learned to match the names with species, and it became clear that the length of the bird's name varied inversely with its size. Monosyllables like "i" and "wo" were reserved for eagles and large pigeons, while tiny warblers had names of seven syllables. But all the names were of known species. None could have been one of cryptozoology's mythical monsters.

I can only conclude that accounts initially suggestive of mermaids and dinosaurs in New Guinea—or anywhere else—invariably have mundane explanations: misun-

## *Villagers ticked off birds with such colorful names as the i, wo, screw, screw-screw, du-du, pis-pis, yor-bitchul-bitchul*

derstood questions, questions answered "yes" in order to please the questioner, and natives amusing themselves at the expense of gullible Westerners.

**T**he animals actually being found are, alas, bush league: mostly small creatures of little consequence to anyone other than specialists. As for big terrestrial mammals, no new genus has been discovered since 1904 (the giant forest hog of Africa), and no new species has been described since 1937 (the kouprey). While the new genera of rats and bats languish unsung by cryptozoologists, there has been no new genus of primate since 1907 (Allen's swamp monkey), and no new genus of carnivore since 1919 (the Congo water civet). The rediscovered mammals and bats have all been animals thought to have become extinct within the past 20,000 years, and the birds within the last few centuries.

Can we really be sure that none of the Big Four will ever turn up? Of course not. In 1812, long before discoveries of large mammals reached a peak, the great

French zoologist Cuvier foolishly declared, "There is little hope of discovering new species of large mammals." When my college chemistry teacher, the late George Kistiakowsky of Harvard, was young and cocky, he argued heatedly with an older chemist about a possible chemical compound, confidentially concluding, "I stake my entire scientific reputation on the prediction that this compound will be found to exist." To which the older man quietly replied, "I will go even further than you: I bet ten dollars that it does not exist."

In tribute to Kisti, I bet my scientific reputation that at least twenty new species of birds and ten new genera of mammals will be found by the year 2000. I also bet \$10 that these won't include Sasquatch, Nessie, or any dinosaur. (No bets on Yeti! An experienced zoologist tells me he has found tantalizing droppings and footprints in the Himalayas.)

With this possible exception, the optimism of cryptozoologists seems doubly misplaced. While they seek monsters that probably don't exist, they ignore new discoveries of important smaller creatures. And while they dream of studying animals to be found in the future, they ignore the chance to study known animals that are now vanishing. Why must an animal disappear before it attracts interest? Hundreds of birds and mammals that have never been studied carefully are in danger. That number will reach thousands as the destruction of tropical rain forest, the earth's most species-rich habitat, proceeds at its appalling pace. Almost all these extinctions are traceable to man, which compels me to agree with Heuvelmans on one point. He's right when he says, "It is we who are the real monsters." □

### KAKAPO



A rediscovered New Zealand species is the world's heaviest and only flightless parrot.

### ICE-AGE PECCARY



This 80-pound creature was thought extinct until found in Paraguay in 1972.

### TREE KANGAROO



A multicolored 'roo that gave the author brief intimations of cryptozoological nirvana